

MISSOURI CONSERVATIONIST

VOLUME 83, ISSUE 3, MARCH 2022
SERVING NATURE & YOU



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Pawpaw



MISSOURI
CONSERVATIONIST



ON THE COVER

Western kingbird

© NOPPADOL PAOTHONG

600mm lens, f/9
1/250 sec, ISO 100

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Inbox



Letters to the Editor

Submissions reflect readers' opinions and may be edited for length and clarity. Email Magazine@mdc.mo.gov or write to us:

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START 'EM YOUNG
Our youngest granddaughter — 6 months — loves the pictures as much as the older grandkids, and we enjoy sharing the whole magazine with them!

Margery and Garry Ellis
Wentworth

LEARNING TO FLY

In the December 2021 issue, I read *Learning to Fly* [Page 22]. I liked learning how to make flies. Thank you for writing the article. I'd like to see more about fly-fishing. I can't wait for spring to try out the new flies.

Andrei S. via email

OUTDOOR ADVENTURE

I was happy to see the brief article in the January 2022 issue about a new MDC team focused on expanding nature-based outdoor recreation on conservation areas [*Annual Review*, Page 23]. I would love to see more promotion of activities, such as hiking, camping, biking, paddling, and rock climbing. By doing so, a whole new generation of people can be exposed to the beauty of our state and enjoy the many recreational opportunities. My husband and I recently spent a lovely half day rock climbing at the newly opened climbing area in Rockwoods Reservation. We were very grateful to have such a nice place to go climbing close to home in St. Louis. We look forward to seeing more areas become open to climbing.

Debbie Frank St. Louis

LEAVE WILDLIFE WILD

A few years ago, we found a fawn alone and hunkered down by our house. It wasn't long until

the mom showed up and led her baby off into the woods. From time to time, they'd pass back by, and we got to watch that fawn grow to maturity.

Mike Marshall Black

MEMORIES CONTINUE

My dad loved your magazine and always kept a copy on his kitchen table. When I'd visit, he would show me a page or two — he especially loved the *What Is It?* I think he must have signed me up for a subscription, too, because it started showing up in my mailbox after one particular visit. He passed away about six years ago, but I still get that subscription every month. It's a welcome reminder of my dad, and I spend days thumbing through the pages at the kitchen table during breakfast. Thanks for making such a wonderful publication.

Andrew Richmond St. Louis

A LIFELONG READER'S HOPE

Since I was born one year after you started publishing in 1938, I can truly say that I'm a lifelong reader. It's seldom that I don't read it cover to cover with anticipation and awe of the excellent content and photography. I can only hope my grandchildren and their children can enjoy the fruits of your efforts with an underlying appreciation of the outdoors and environment as I have had the privilege to enjoy.

Dave Pope via email

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Send a note using our online contact form at mdc.mo.gov/commissioners.

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The Missouri Department of Conservation protects and manages the fish, forest, and wildlife of the state. We facilitate and provide opportunity for all citizens to use, enjoy, and learn about these resources.



**Want to see your photos
in the Missouri Conservationist?**

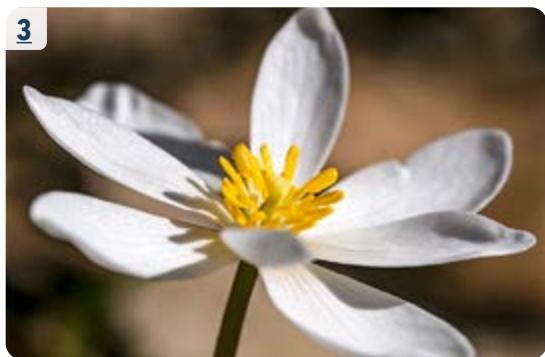
Share your photos on Flickr at flickr.com/groups/mdcreaderphotos-2022 or email Readerphoto@mdc.mo.gov.

**1**

1 | Eastern gartersnake by [Paul Rains](#), via Flickr

2 | Six-spotted tiger beetle by [Maria Moore](#), via Flickr

3 | Bloodroot by [Mark Putman](#), via Flickr

**2****3**

**Want another chance to see
your photos in the magazine?**

→ In the December issue, we plan to feature even more great reader photos. Use the submission methods above to send us your best year-round pictures of native Missouri wildlife, flora, natural scenery, and friends and family engaged in outdoor activities. Please include where the photo was taken and what it depicts.

TAYLOR LYNN PHOTOGRAPHY



Up Front

with Sara Parker Pauley

✖ Even in middle age, I'm childlike when it comes to snow — not the light, dusting kind, but the blanketing kind that broad brushes the landscape entirely and silences the world. Most of Missouri got a late winter snow like this a few weeks ago. And though I love the stillness that such a snow brings, I was relieved by the song of a cardinal the next morning, reminding me that life still abounds, and spring is coming soon.

I came across a 2007 BBC special recently that featured scientists arguing with musicians on why birds really sing — to attract mates and keep rivals away, said the scientists. Yes, and because it brings them joy, said the musicians. Back and forth they presented their cases. Why couldn't both be true? As musician David Rothenberg noted, "the seemingly innocent topic of bird song shows us that we need a combination of many visions of nature to make sense of the whole."

But many of our feathered earthly companions are in trouble. We've lost nearly 30 percent of all birds since 1970 and even some common species such as sparrows are in decline. To learn more about this plight and what you can do to turn the tide, MDC ornithologist Sarah Kendrick's article on Page 10 will shed light and hope.

As poet Douglas Malloch reminds us, "You have to believe in happiness or happiness never comes. Ah, that's the reason a bird can sing, on his darkest day he believes in spring."

Sara Parker Pauley —

SARA PARKER PAULEY, DIRECTOR
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Nature LAB

by Dianne Van Dien

Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

RESOURCE SCIENCE

Slowing Insecticide Movement in Soil

❸ **Neonicotinoids** (also called **neonics**) are a common type of insecticide, often applied to corn and soybean seeds. They protect plants, but when carried by rainwater into streams and other habitats, neonics can harm beneficial insects and other nontarget species.

"Only about 5 percent of neonicotinoids is taken up by the crops," explains U.S. Geological Survey (USGS) ecologist Lisa Webb. "So, the residual 95 percent is left to move around in the soil."

To learn what might keep residual neonics from moving into nontarget ecosystems, MDC partnered with University of Missouri researchers to study how one neonicotinoid — imidacloprid — interacts with soils from different habitats.

First, the team randomly selected six sites from MDC conservation areas where crops are planted. Then, at each site, graduate researcher Laura Satkowski collected soil from crop fields, grass buffer strips, and nearby riparian areas (streams or rivers



The soil in vegetative buffer strips, such as grassy field margins and trees along streams, helps reduce movement of neonicotinoid pesticides from crop fields into waterways and other sensitive habitats.

Study shows vegetative buffer strips can reduce neonicotinoid movement into other habitats

lined with trees) and brought the soil back to a lab for chemical analyses and experiments.

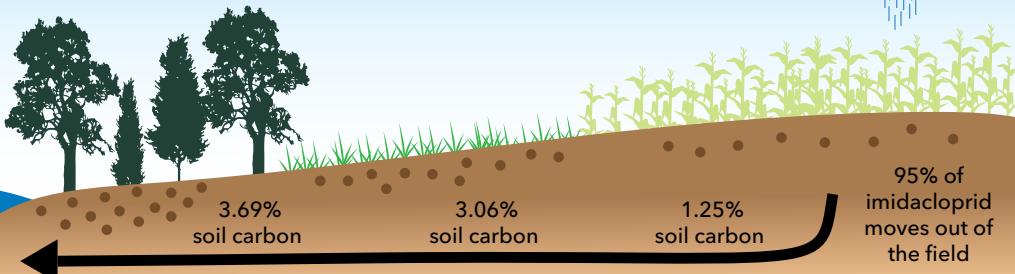
Results showed that imidacloprid passed most quickly through crop soil and most slowly through soil from wooded riparian areas. Organic carbon was a key factor. The more organic carbon in the soil, the more imidacloprid was retained rather than being carried away in water. Soil from grassy and riparian buffer areas contained more than twice as much carbon as soil from crop fields.

"This study shows the importance of protecting and expanding riparian corridors as well as woody draws to help keep these chemicals out of aquatic ecosystems," says retired MDC Environmental Resource Scientist Doreen Mengel. "Similarly, planting grassy strips along the edges of crop fields can help, and including cover crops in crop rotations can add carbon to the soil."

Neonicotinoid Movement in Soil at a Glance

MDC Partners: University of Missouri School of Natural Resources and USGS Missouri Cooperative Fish and Wildlife Research Unit

Imidacloprid (a neonicotinoid pesticide) moves more slowly through soils with more organic carbon and most easily through soils with little carbon, such as the soil in many crop fields.



In Brief

News and updates from MDC

GET HOOKED ON TROUT FISHING

MDC ENCOURAGES ANGLERS TO MARK THE ANNUAL OPENER WITH A TRIP TO ONE OF FOUR TROUT PARKS

→ March 1 marks the annual opening of catch-and-keep trout fishing in Missouri at the state's four trout parks: Bennett Spring State Park near Lebanon, Montauk State Park near Licking, Roaring River State Park near Cassville, and Maramec Spring Park near St. James. The catch-and-keep season at the trout parks runs through Oct. 31.

MDC operates trout hatcheries at all four parks and stocks rainbow trout daily throughout the season.

Trout anglers need a daily trout tag to fish in Missouri's trout parks. Daily trout tags can only be purchased at each of the four trout parks. Missouri residents 16 through 64 and nonresidents 16 and older also need a fishing permit in addition to the daily tag.

The cost of a daily trout tag to fish at three of Missouri's four trout parks — Bennett Spring State Park, Montauk State Park, and Roaring River State Park — is \$4 for adults and \$3 for those 15 years of age and younger. A daily fishing permit for Missouri residents and nonresidents is \$8. The daily limit is four trout.

At Maramec Spring Park, where the daily limit is five trout, the cost of a daily trout tag for adults is \$5 and \$3 for anglers 15 years of age and younger.

Trout hatcheries are just one way that conservation pays in Missouri. MDC staff stock more than 800,000 trout annually at the state's four trout parks and approximately 1.5 million trout annually statewide. Trout anglers spend more than \$100 million each year in the Show-Me State, which generates more than \$180 million in business



activity, supports more than 2,300 jobs, and creates more than \$70 million dollars in wages. About 30 percent of Missouri trout anglers come from other states, so a substantial portion of trout fishing expenditures is "new money" for the state's economy.

Missouri also offers excellent trout fishing throughout the state on rivers and streams that support naturally reproducing trout. For more information on trout fishing in Missouri, visit short.mdc.mo.gov/Zvy.

Buy Missouri fishing permits from numerous vendors around the state, online at mdc.mo.gov/buypermits, or through MDC's free mobile apps, MO Hunting and MO Fishing, available for download through Google Play for Android devices or the App Store for Apple devices.

REMINDER TO TROUT ANGLERS: To prevent the spread of the invasive alga called didymo or "rock snot," the use of shoes, boots, or waders with porous soles of felt, matted, or woven fibrous material is prohibited at all trout parks, trout streams, Lake Taneycomo, and buffer areas. Get more information at short.mdc.mo.gov/4ZA.



FINAL DEER, TURKEY HARVEST TOTALS TALLIED

Deer

Missouri's 2021–2022 deer hunting season ended Jan. 15 with a preliminary total harvest of 293,670. Of the deer harvested, 143,049 were antlered bucks, 26,599 were button bucks, and 124,022 were does. Top harvest counties for the season were Franklin with 6,392 deer harvested, Texas with 5,478, and Callaway with 5,452.

Hunters harvested 297,214 deer during the 2020–2021 deer hunting season, with 140,855 being antlered bucks, 28,652 being button bucks, and 127,707 being does.

Deer hunting ended with the close of the archery season. Preliminary data showed that hunters checked 60,834 deer during the 2021–2022 archery deer season, making it the third highest archery deer harvest on record. Top counties for the archery deer season were Jefferson with 1,563 deer harvested, St. Louis with 1,368, and Franklin with 1,274.

Hunters checked 67,487 deer during the 2020–2021 archery deer season. This year's archery deer harvest total was 10 percent below last year's record harvest and 8 percent higher than the previous five-year average.

For deer harvest totals by season, county, and type of deer, visit short.mdc.mo.gov/Z3g. For deer harvest summaries from past years, visit short.mdc.mo.gov/4ZM. For more information on deer hunting in Missouri, visit short.mdc.mo.gov/ZvC.

Turkey

Fall archery turkey hunting also ended Jan. 15. Preliminary data showed 2,523 turkeys harvested. Top counties for the fall archery turkey season were Franklin with 69 turkeys harvested, Jefferson with 67, and Callaway with 61.

Hunters harvested 2,350 turkeys during the 2020–2021 fall archery turkey season.

For more turkey harvest information for the current season, go online to short.mdc.mo.gov/Z3g. For more harvest information on past turkey seasons, visit short.mdc.mo.gov/4ZQ. For more information on turkey hunting in Missouri, visit short.mdc.mo.gov/Ztu.

MDC reported one fatal and three non-fatal, self-inflicted firearms related hunting incidents during deer season.

Ask MDC

Got a Question for Ask MDC?

Send it to AskMDC@mdc.mo.gov or call 573-522-4115, ext. 3848.

Q: I saw a barred owl on the edge of our woods. We have about 12 acres of forest behind our house. Would an owl house be a good idea?

► Barred owls reside along forested streams, lakes, rivers, and swamps, particularly in deep woods with big timber. They forage at night, and often even during the day. But when large trees are removed or downed, these cavity nesters miss out on opportunities for quality habitat.

Erecting a nesting box can help attract a breeding pair to your neighborhood. Make sure you put it up well before breeding season, which begins in earnest in March. Attach a guard to keep predators from raiding eggs and young. It's best for the box to be about 12–15 feet high, attached to either a live tree or a post. And barred owls are more likely to use the box if it is within 200 feet of water.

Once a breeding pair has identified and occupied the space, expect to see two or three round, white eggs. The incubation period will last 28 days, and the owlets are reared for 42 days.

Although this owl is not often seen, its classic series of hoots is commonly heard and easily identifiable as sounding like the



Barred owl

phrase, *Who cooks for you, who cooks for you all?*

To find out more about how to correctly build and place a box, visit short.mdc.mo.gov/4Zm.

Q: I found these on the sunny side of a juniper. What insect makes these?

► These were made by evergreen bagworm moth caterpillars. These caterpillars create their cases, or "bags," using silk and bits of plant foliage. The caterpillars drag these cases around as they feed and eventually will secure the bag to a branch or other solid structure to pupate.

Although named the evergreen bagworm, these caterpillars feed on a variety of trees and shrubs, including deciduous trees. Normally bagworms are covered in juniper clippings, but they'll attach clippings of whatever

plant they're feeding on. You might look around in your flower beds or on nearby plants for more bagworms. To see what bagworms look like when they've fed on deciduous plants, visit short.mdc.mo.gov/4Zs.

Eggs hatch in late spring and tiny caterpillars can move to new plants by throwing out a silk thread into the wind, which is called "ballooning." Once whisked to a new plant — sometimes far away — they start to build their new bags almost immediately. They remain mobile while they are feeding, carrying their bags like hermit crabs carry their shells. Female moths are wingless and don't leave their bags; male moths can fly and do leave their bags to mate with females. Eggs are laid in the bags.

Bagworms can be a pest of both native and ornamental evergreens. Not only can they strip native eastern red cedars in natural locations to the point the cedars die, but they also can harm the ornamental junipers in your yard. If you have shrubs or trees



Evergreen bagworms

with large numbers of bagworm cases, you may want to remove these cases to help reduce the number of caterpillars present this summer.

They are overwintering in the egg part of their lifecycle now. Since they are not feeding, insecticidal treatments are ineffective. But bagworms can be hand-picked off plants and disposed of in a garbage bag or thrown in a bucket of soapy water. For more information on bagworms, visit short.mdc.mo.gov/4Ze.



Jacob Fisher

ST. CLAIR COUNTY
CONSERVATION AGENT
offers this month's

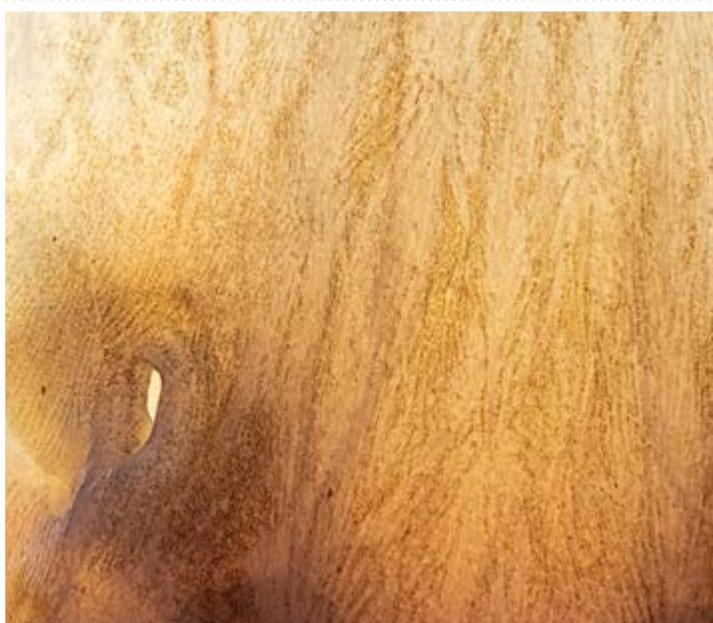
AGENT ADVICE

As spring makes its return to Missouri, the excellent fishing opportunities draw anglers to boat ramps and the water's edge. It is a great time to rediscover the joys of spring fishing for both crappie and paddlefish. As you make your way to the water, keep water safety in mind. It is a good idea to bring extra layers, as early spring mornings can be crisp, especially on the water. Remember, if you are going to be on a boat, personal flotation devices are required for each occupant and should be accessible in the event of an emergency. Take a safety tour of any vessel you board to familiarize yourself with the location of the life vests and other safety equipment.

What IS it?

Can you
guess this
month's
natural
wonder?

*The answer is on
Page 9.*



FOR MORE INFORMATION, INCLUDING REQUIRED PERMITS, NEW INFORMATION ON PADDLEFISH LIMITS ON SOME BODIES OF WATER, AND MORE, CHECK OUT A **SUMMARY OF MISSOURI FISHING REGULATIONS**, AVAILABLE AT MDC.MO.GOV/FISHING/REGULATIONS.

WE ARE CONSERVATION

Spotlight on
people and partners
by Angie Daly Morfeld

Mike Szydlowski

→ Mike Szydlowski, K-12 science coordinator with Columbia Public Schools (CPS), is always looking for ways to engage students in science learning beyond the classroom. An opportunity presented itself nearly 8 years ago when he received information from MDC about invasive bush honeysuckle.

An eye-opener

According to Szydlowski, the information came in November and really made an impact on him. As winter settled in and things were turning drab, the green of bush honeysuckle stuck out like a sore thumb. At that time, he mobilized CPS fourth graders and they went to local parks, removing invasive honeysuckle. Since then, the program has grown to include third grade through high school, and those groups have logged nearly 7,000 hours per school year at six local parks. Due to their efforts, these parks have seen anywhere from 10–80 percent of honeysuckle cleared.

In his own words

"None of this would be possible without our teachers who are committed to environmental learning. This is more than service learning — this is a community service. If kids don't spend time outside, they won't learn to love it and won't take care of it."

by Cliff White



What's **your** conservation superpower?



PALLID STURGEON WHAT IS IT?

Pallid sturgeon are large fish, weighing in at 100 pounds and measuring up to 72 inches. Like shovelnose sturgeon, pallid sturgeon have pronounced snouts but longer and pointier. The grayish-white pallid sturgeon is streamlined, which enables it to navigate strong river currents. Once commercially fished, overharvest, dam construction, and habitat loss has landed the pallid sturgeon on the state and federal Endangered Species List. It is also a species of conservation concern.

Learn more about paddlefish snagging regulations, snagging reports, and more at short.mdc.mo.gov/Z9B.

- Remove hooks carefully and get undersized fish back into the water as quickly as possible.
- Never put fingers in the gills or eyes.
- Wet hands before handling fish and avoid excessive handling.
- Use landing nets, not gaffs, which can kill young fish.
- Release sublegal fish for future harvests and offers these tips: MDC reminds snaggers that it is very important to immediately snagging.

A new regulation change established a statewide minimum length limit of 32 inches — measured from the current minimum length of 24 inches for sport/recreational taking of paddlefish, up from the fork of tail — for sport/recreational taking of paddlefish, up from the fork of tail — will remain in effect for Lake of the Ozarks, Table Rock Lake, Harry S. Truman Reservoir, and their tributaries. All paddlefish under the legal minimum to fork of tail — measured from the current minimum length of 34 inches — measured from eye to fork of tail — will remain in effect for Lake of the Ozarks, Table Rock Lake, Harry S. Truman Reservoir, and their tributaries. All paddlefish under the legal minimum length must be returned to the water unharmed immediately after being caught.

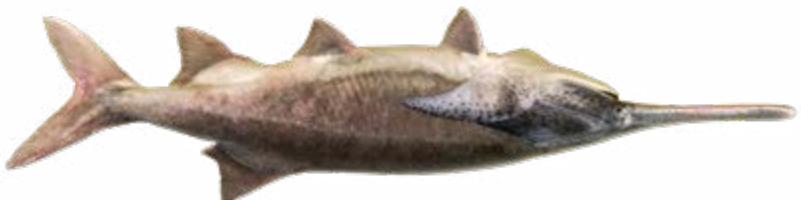
The paddlefish snagging season for the Mississippi River is March 15 through Dec. 15. The paddlefish snagging season for the Missouri River is March 15 through April 30. The season for the Truman Reservoir is March 15 through Dec. 15. The paddlefish snagging season for the two paddlefish on these waters in the state continues to snag after taking a daily limit of two paddlefish on these waters.

According to MDC, the state's major paddlefish snagging waters include Lake of the Ozarks, Harry S. Truman Reservoir, and Table Rock Lake. No person shall more than 100 pounds.

Paddle-shaped snouts — are an ancient species that can grow to 7 feet and weigh more than 100 pounds. That is a reality for thousands of paddlefish snaggers during Missouri's annual spring paddlefish snagging season. Paddlefish — named for their large, diamond-shaped snouts — are an ancient species that can grow to 7 feet and weigh more than 100 pounds.

Imagine catching a giant, prehistoric fish whose ancestors swam during the time of dinosaurs. That is a reality for those who snag Missouri's paddlefish.

PADDLEFISH SEASON OPENS MARCH 15



BOOKLETS AVAILABLE NEW HUNTING, FISHING

Missouri hunters, trappers, anglers, and others can get free copies of MDC's updated booklets on spring turkey hunting, trapping and trapping, fishing, and the Wildlife Code of Missouri starting in early March. The handy booklet have information on related permits, seasons, regulations, limits, conservation areas, sunrise species, regulations, seasons, and more. The free booklet is available online. Visit mdc.mo.gov and use the search tool at the top of the page.

For the Love of Birds

BIRD DECLINES AND WHY WE MUST ACT NOW

by Sarah Kendrick

When I think of nature's greatest joys and beauties, birds rank up at the top of my list — and I don't think I'm alone. Think of the first time that you got a good look at an indigo bunting shining brilliantly neon in the sunlight, or a scissor-tailed flycatcher's salmon-colored flanks, or a bald eagle diving down to pluck a fish from the water with its massive talons. Not to mention birds' power of flight and mind-boggling migratory journeys of thousands of miles each year, for some that don't weigh more than a penny!

Did you know that we've lost 29 percent of North American birds in the last 50 years? A 2019 study in the journal *Science* quantified the net loss in bird populations since 1970 and found a decline of 2.9 billion birds, or roughly one-third of our birds. And not just the rare ones. The hardest-hit and most steeply declining groups of species by habitat are grassland birds, which have shown a loss of 54 percent in the last five decades.



What has caused these declines? Many things, which is why it's so difficult to slow. Large-scale land-use changes have removed or degraded much habitat. Regarding grassland birds, the agricultural landscape is very different than it was 50 years ago. We've lost a lot of timber, small fields, shrubby fencerows, and small fields used for habitat, or old fields scrubby with shrubs for nesting. Increased pesticide use has had an untold effect on the food source of all birds. Even if a bird is granivorous

(only eats seeds), it's feeding its young insects. Not to mention threats during migration and habitat removal on the wintering grounds for our migrant birds. The list goes on and on.

In the face of such declines, what can we do to help? Lots. There are small and large behaviors or actions we can all change today that will help us curb these declines, but we all must band together to make these changes at scale to really make a difference. Here are seven simple actions you can take for birds, today.

Why should I care about birds and their decline?

- Birds eat 400–500 million tons of insects every year.
- Vultures eat dead carcasses and metabolize diseases like botulism and rabies. They eat disease and it doesn't pass out the other end, preventing both wildlife and human health outbreaks.
- Birds disperse seeds to vegetate our world, and hummingbirds help pollinate many flowering plants. One blue jay can bury 4,500 acorns during a mast year to find later to eat. Luckily for oaks, they only remember the location of 1 in 4 of them, so they are oaks' most efficient seed disperser.



Grow Native Plants, Shrubs, and Trees

Native plants attract and sustain native insects and provide a perennial and long-lasting buffet for our birds right around your home with little to no maintenance. It's a win-win for the birds and your water bill. Nonnative plants did not adapt to Missouri's climate and conditions, so they hold little to no ecological value for native insects and therefore, do not provide the food that native birds need. Remember, even if birds are granivorous, they feed insects to their young. It takes 7,000–9,000 caterpillars to raise just one clutch of chickadees, so think how many insects are needed for all the birds nesting around you. Plant a variety of native plants, shrubs, and trees to attract birds to your yard or property. Learn more about bird-friendly natives at Missouri Prairie Foundation's GrowNative! website grownative.org/learn/support-native-songbirds.

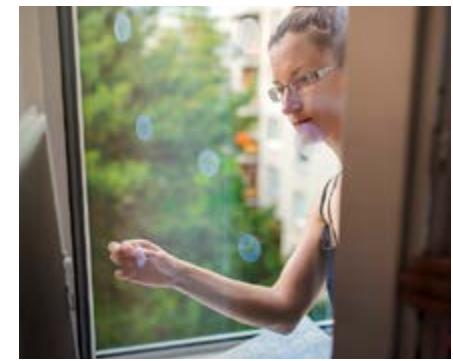
In terms of diversity and number, oak trees are the most productive native plant in the United States. Oaks host over 900 butterfly and moth species, which birds love to munch on.

Reduce Window Collisions

We've all seen or heard a bird crash into a window at our home or workplace. Think of how much glass is present on the landscape at our homes and urban centers. Those collisions add up. Birds see sky or vegetation reflected in the glass and think it's a pass-through. Even if a bird revives and flies away after a collision, we don't know how that



The mowed, pristine lawn is the new conservation frontier — we all can find some space to plant a few native plants to sustain our native birds!



TREE SWALLOW: JIM RATHER; NATIVE LANDSCAPE: DAVID STONER; NORTHERN CARDINAL: AMERICAN ROBIN, BLUE WINGED WARBLER: NOPPADOL PAOTHONG; OAK: JIM RATHER; GLASS STICKER: © IDACOISY | SHUTTERSTOCK.COM; PESTICIDES: © MABELINE72 | SHUTTERSTOCK.COM

Drink Bird-Friendly Coffee

One-third of birds that breed in Missouri leave the U.S. for up to eight months of the year in the nonbreeding season during migration and winter. Most of the winter ranges of these migratory birds overlap with the Coffee Belt, or the world's coffee-producing region generally located near the equator. So naturally, production of coffee and other agriculture has effects on "our" birds — or rather, our shared birds.

Just imagine billions of birds across Canada and the U.S. migrating south and piling into tropical forests, gorging on insects in a relatively narrow strip from Mexico through Central America, South America, and the Caribbean. You can see how the conservation of tropical habitats in these regions are essential, given that they sustain "our" Missouri breeding birds for over half the year, waiting for spring's breeding-season insect abundance.

Deforestation, sometimes to make room for agricultural commodities like coffee grown in sun, is a major threat to migratory stop-over sites and wintering grounds. Bird-friendly coffee leaves a canopy of native trees over coffee shrubs to produce a higher-quality and better-tasting coffee grown in shade. This native tree canopy maintains foraging habitat for our migratory birds over top of the shade-grown coffee.

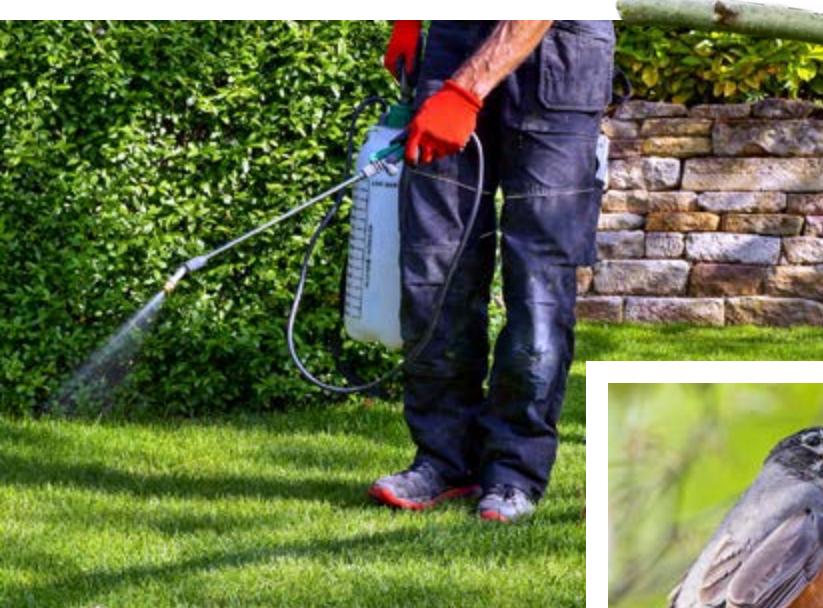
The Smithsonian Migratory Bird Center provides an online resource to find bird-friendly coffee near you: nationalzoo.si.edu/migratory-birds/where-buy-bird-friendly-coffee. Ask your local coffee shop to roast bird-friendly beans. Ask them if they know what bird-friendly is — if not, chat with them about it.



Prior to the 1950s, all coffee was traditionally grown in shade. Farmers learned they could grow in full sun and increase yields, but it produces a lower-quality tasting coffee.



Blue-winged warblers migrate to Mexico and Central America for over half of the year with many squished into a relatively small range — so land-use and ag practices down south can affect habitat they need.



If you can find a nest in your yard and watch from a safe distance, record how many times the parents bring food to the nestlings in an hour and see how that increases as they get older. You may be shocked!



Reduce Pesticides

Remember that all our Missouri birds are insectivores for part of their life (except goldfinches, which feed their young exclusively seeds) and most feed their young insects. If you give your yard a pesticide bath, you're removing that food source. Remember that native plants are best for insects and birds in your yard, but you don't want to remove the insects — that's the point.

Keep Cats Indoors

This is a tough, hot-button topic. People love birds and people love cats, but they often side with cats. It's not a competition, but cats are the number one cause of wild-bird death on the landscape. But it's not the cat's fault. They are a natural predator, so it's not surprising that they kill and eat billions of birds and other small wildlife annually. There are things we humans can do to help protect birds and give our cats an outdoor experience. They're called catio, or enclosed outdoor patios for our cats. These enclosures keep our cats away from cars, disease, or potential predators — and it's also safer for birds and other wildlife. For more information on catio, visit abcbirds.org/catio-solutions-cats.



Reduce Plastics

This one may surprise you. Even though we're in a landlocked state, plastics still impact wildlife through litter, landfills, and eventually end up in our waterways and the ocean. Plastics take thousands of years to decompose. When you think about how many single-use plastics humans use in daily life multiplied by billions of us on the planet, it can be overwhelming. Many seabirds are impacted by plastics. Albatrosses and other seabirds are ingesting micro-plastics floating in the Pacific Ocean's trash islands and feeding them to their young, thinking they look or smell like fish. Some of these birds naturally starve. Try to purchase multi-use plastics or glass products to minimize single-use or throw-away plastic products for long-term reduction of plastics on the landscape.



Record Your Bird Sightings

When you go birdwatching, report your bird sightings through eBird.org or contribute your bird ID knowledge to a breeding bird survey or Christmas Bird Count. The U.S. Geological Survey's North American Breeding Bird Survey uses volunteers to count birds along survey routes once per year during the breeding season as a long-term measure of bird trends. Much of the data used for the *Science* article on bird declines was from this long-term survey that's been conducted annually since 1966. eBird is

Take a friend or child birdwatching, or experience nature with them. You'll pass on your passion and hopefully recruit more people to care about birds and nature.

a massive online database of birder sightings that has grown to such a size that it's contributing to science and conservation. eBird has amassed one billion bird detections and it's growing in popularity each year, largely through a smartphone app to log what you see outdoors. eBird users have reported so many detections on migration routes and wintering grounds that it's allowing conservationists to protect migratory (and non-migratory) birds through their full annual cycle in targeted locations to be as efficient and effective as possible.



Sedge wren

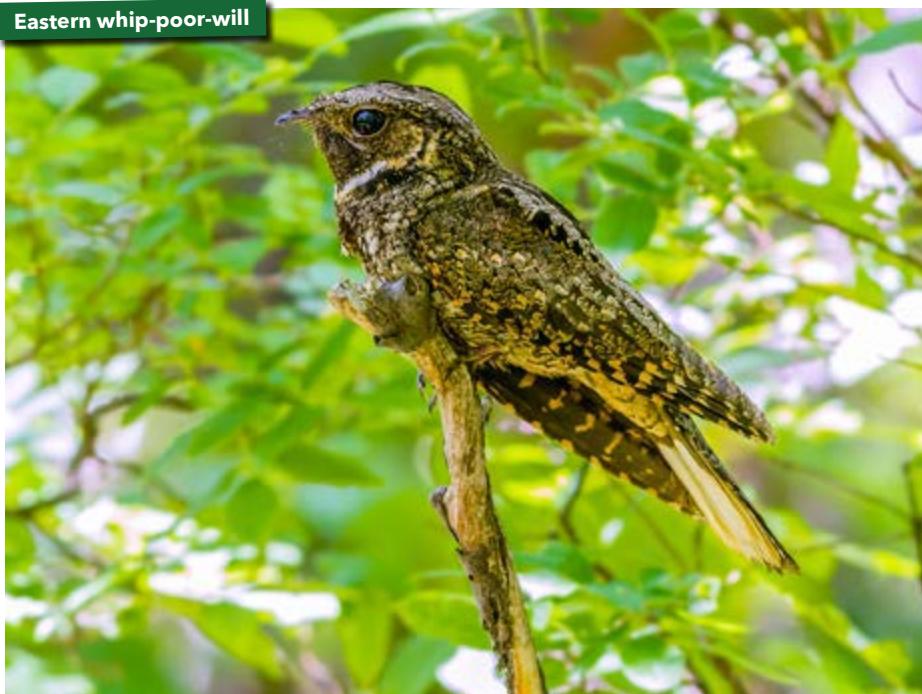
Conservation Works

Not all bird guilds are declining. Waterfowl is one of the only groups of birds that have increased over the last 50 years because conservation works. Due to targeted waterfowl and wetland conservation programs like Ducks Unlimited and the financial support of waterfowl hunters and federal wetland protection programs, wetlands are being protected and we are seeing the benefits. These are concerted, focused conservation efforts that we can learn from for other groups of species — and we must, or they will continue to decline, and we may begin to see extinctions of birds that used to be common.



Birds like whip-poor-wills and prairie warblers are a few of Missouri's most threatened species. Find out how you can help provide habitat for them in the Missouri Bird Conservation Plan at short.mdc.mo.gov/44q.

Eastern whip-poor-will



Prairie warbler



Short-eared owl



What Can You Do To Help Birds?

We can change this trajectory for North American birds, but we need to act now. State and federal agencies and bird-conservation organizations are pulling together and scrambling to find ways to help birds at a large scale. But conservation groups can't do it all. We are desperate for help at all levels — I urge you to find ways to help birds at some scale. It will make a difference. Switching to bird-friendly coffee and promoting it to your local coffee shops, friends, and family is a great start. Treating the exterior of your windows at home with decals to deter bird strikes and talking to friends and employers to do the same is another great step.

Taking these steps now to will help ensure we can continue to enjoy birds and future generations can be dazzled by the salmon-colored flanks of that scissor-tailed flycatcher, hear the plaintive whistle of a pewee, or enjoy the melodic chime of a meadowlark ringing across the field. There is something we can all do for birds right now — and we must. ▲

State Ornithologist Sarah Kendrick works in MDC's Science Branch. She has a master's degree in avian ecology and challenges everyone to learn how they can help the continent's rapidly declining bird population by visiting 3BillionBirds.org.

Black



widow

SOUTHERN BLACK WIDOW
PHOTOGRAPH BY JIM RATHERT

BEAUTIFUL SPIDER WITH AN UGLY REPUTATION

by Paul Calvert

Years ago, my family was participating in an evening naturalist program on spiders. The naturalist was asking participants to identify photos of some common spiders. At the time, my 8-year-old son was truly thirsty for knowledge, and he was sitting on the edge of his seat waiting to be the first to identify one of the spiders. When the picture flashed on the screen, he leaped out of his chair and screamed, "*Latrodectus mactans*." After a long awkward silence, the naturalist looked at him and said, "No, it is a black widow." He came back to sit on my lap, devastated and looking for reassurance. As a supportive father, I reassured him he was right. As a biologist I had to whisper to my wife that he was partially right. The scientific name of the widow genus is *Latrodectus*, and in Missouri, we are blessed with two species, *L. mactans* and *L. variolous*. The picture was of *Latrodectus variolous*. I should have emphasized common names to him.



Northern widow



Southern widow



American house spider



The most common spider in Missouri is the American house spider, *Parasteatoda tepidariorum*, a close relative of the black widow.

All in the Family

Black widows belong to the spider family *Theridiidae*, the comb-footed spiders or the cobweb spiders, and although they are probably the most famous spiders in this family, they are not the most abundant. The American house spider, *Parasteatoda tepidariorum*, is probably the most common comb-footed spider found in Missouri and maybe the most common spider in the world. This is probably because of their adaptability to human structures and are often found in houses, basements, barns, and other outbuildings. While most widow spiders are not deterred by human interaction and can be found in and around human structures, they aren't as common as their cousins.

This family is called cobweb spiders by the general public because of their apparent messy webs with silk being placed in irregular patterns with no symmetry. They are identified as comb-footed spiders in the scientific world because of the presence of a row of serrated bristles that look like a comb on the last segment of their fourth pair of legs. Not easily seen with the naked eye, this "comb" is used to draw out and throw sticky silk from the spinnerets when wrapping prey captured in their web. Secure wrapping is critically important in this family because their chelicera and fangs that they use to inject their venom and digestive juices are small and lightly built.



While Missouri is home to two species of widow, five can be found throughout North America.

Black widows can be found throughout Missouri's natural habitats.

American Species

North America has five species of widow spiders (all found in the United States) — one introduced species, the brown widow (*L. geometricus*), found along the gulf coast and southern California; one listed species, the red widow (*L. bishop*), endemic to Florida; and three common species of black widows, the northern (*L. variolous*), southern (*L. mactans*), and western (*L. hesperus*). The western black widow has a range from the Great Plains to the west coast. The northern and southern split the country geographically, as their names suggest, with significant overlap.

Show-Me Widows

Missouri has the northern and southern black widow. Both can be found throughout our state in all our terrestrial habitats — forests, glades, and prairies. Although generally well hidden, they can also be found in and around our houses in wood piles, rock piles, flower gardens, and old buildings. In the not so distant past when outhouses were still an important “room in the house,” the warm, moist, fly-rich environment was a gathering spot of many spiders, but especially preferred by black widows. This caused sometimes painful and not so positive interactions with humans.

Female black widows get all the attention. I believe it is not because of their toxic venom or their supposed predisposition to eating their mates, although that contributes to their name, local folklore, and the legends surrounding these spiders. I believe it is for their most obvious attribute — their striking color contrasts. Their shiny, almost porcelain-like, black color and the contrasting, almost acrylic-like red hourglass and spots on their fat abdomens are eye-catching. Add to that their large, rounded abdomen tapered toward the spinnerets in a teardrop shape and their much smaller cephalothorax (head and thorax region) and long delicate legs. They are beautiful spiders and somewhat hauntingly majestic when seen hanging upside down in their webs.

The Difference Is In the Details

Separating the two can be easy when time is taken to observe them. The northern black widow (*L. variolous*) is generally smaller in size than the southern black widow (*L. mactans*), less than $\frac{1}{2}$ inch (excluding legs). With the legs, it is up to 1 inch. The northern black widow's hourglass is on the underside of her abdomen and is always distinct but broken. Meaning the thin middle portion of the hourglass is not there. There is also typically a row of red dots down the middle of her back. In immature spiders and adult males there may also be four white diagonal lines associated with the red dots. The males are half of the size of the females ($\frac{1}{4}$ inch excluding legs) and a much thinner body frame.

The southern black widow (*L. mactans*) is a little larger than $\frac{1}{2}$ inch (excluding legs). With the legs, it is up to $1\frac{1}{2}$ inches. The only red marks she has are the complete bright red hourglass mark on the underside of the abdomen, and a red spot just behind and above the spinnerets. Immature spiderlings approaching maturity may have a row of red dots down their back. If so, it might be difficult to distinguish from its northern cousin. Sometimes the hourglass color may range from yellowish to various shades of orange or red. Like its northern cousin, the males are about half the size of the females and the joints on their legs are orange-brown in the middle and black on the ends. On the sides of the male's abdomen there are four pairs of red and white stripes.

Although differences between the two species are noticeable to trained eyes, the adult females are more distinguishable from their male counterparts (bottom photos of each column). The northern widow is smaller and the hourglass is typically broken. She also generally has more red on the back of her abdomen.

The Northern Black Widow (*L. variolous*)



The Southern Black Widow (*L. mactans*)



Home Sweet Web

They live in unorganized webs in trees, shrubs, or on the forest floor; around rocks, clumps of grass, or small trees on glades and prairies; and basements, corners, or eves of structures. Their webs can be small or quite large depending on the space that is available and the abundance of food. The spiders can be found in a corner of the web many times hiding under leaves or debris. Prey is captured in the very strong and sticky silk. Once entangled, the spider rushes quickly to the prey, bites, and retreats a short distance. As the prey begins to succumb to the venom, the spider draws closer and wraps the prey tightly in a silk lunch bag. Once the prey is no longer struggling, they will begin to consume their lunch, injecting digestive juices into the prey and sucking their lunch through their hollow, strawlike fangs. Both males and females live in their webs until it is time for the males to find a mate. This journey begins after their final molt into adulthood.



Northern widow



Southern widow



Southern widow

As Smooth as Silk

Black widow silk is five times stronger than steel and, until recently, was always considered stronger than any other spider silk. Now, it is second to a spider found in Madagascar – the Darwin bark spider. Black widow silk has been used for several decades as crosshairs in gun sites, telescopes, periscopes, and microscopes survey levels because of its small size (1/10,000 of an inch), strength, durability, and its immunity to atmospheric pressure changes.



Southern widow



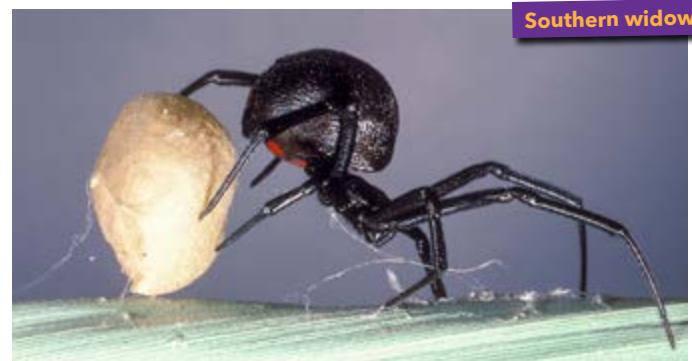
While hundreds of eggs are in each egg case, only a few of these eggs will live to adulthood and reproduce.



Western widow

Spider Bites

Black widow spiders have poor eyesight and are very dependent on their webs. When dislodged from their webs, they are not aggressive, and they usually roll up in a defensive ball or flee for the closest cover or dark space. Most bites occur when the contact is made with the web or when a dislodged spider is pressed against the victim's skin and bitten defensively. The bite is painless or an inconspicuous pin prick. Their venom is a neurotoxin and can be very dangerous to individuals who are very young, old, or in poor health.



Southern widow

Life Cycle

Mating for both species takes place in spring or summer. After mating, the female can store a lifetime of sperm to fertilize all the eggs she will produce. She can lay up to nine egg sacs over her life span, each containing about 400 eggs. Eggs hatch in 20–30 days, and the spiderlings will molt once while in the egg sac and feed on their brothers and sisters until they are ready to emerge from the sac. Those surviving and emerging from the sac spend a few days in the web with mom then disperse through the process known as ballooning, shooting strands of silk out of their spinnerets until the wind catches them and carries them on air currents to their new homes where they build their own webs. It takes up to four months for females to mature and two to three for males depending on available food. The female may survive for up to two years and the male up to five to six months.

Although they live a short life that is mostly hidden from our view, and like most spiders, are often feared, misunderstood, and underappreciated, in the end, these beneficial and beautiful spiders add to our biological diversity and the overall health of our ecological system. ▲

Paul Calvert worked at the Missouri Department of Conservation for 26 years. He has always enjoyed studying the life history of insects and spiders and sharing the natural world with those around him.

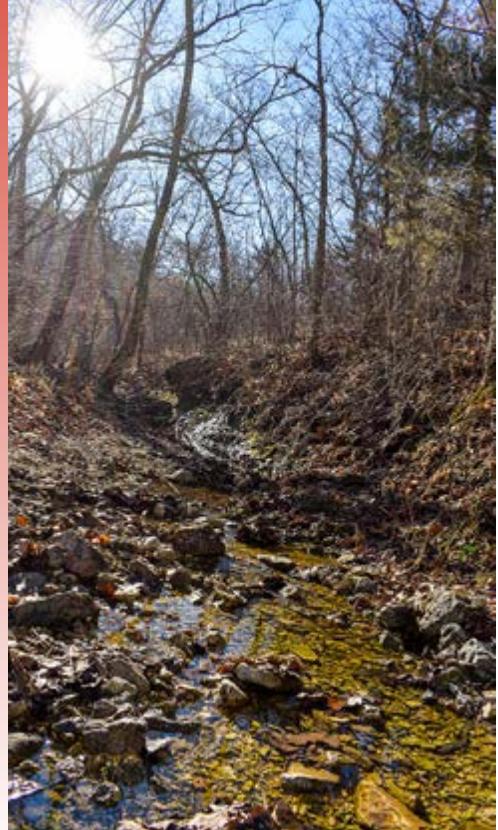
Conservation Areas Get yelped

STAFF VISIT CONSERVATION AREAS
AND GIVE THEIR REVIEWS

The Missouri Department of Conservation manages more than 1 million acres of land, which makes up more than 1,000 conservation areas spread across our wide state. Though each area is unique in size, offerings, and amenities, they all offer adventure. You can find one close to home for a quick getaway or one not too far away if you're interested in a staycation.

Whatever your pleasure, MDC has you covered! Use the MO Outdoors app, available free for Android or iPhone, to help find the perfect area for you. Find conservation areas, determine activities available, learn the area's regulations, download maps, and more. For more information, visit short.mdc.mo.gov/Zed.

To help get you started as you plan your own outdoor fun, six staff from the *Missouri Conservationist* chose a different area to visit and review.



Lead Mine Conservation Area



Larry Archer said:

Looking for a quick “first-day” hike in early January, I landed at Lead Mine Conservation Area in Dallas County. First, a word of warning: plan your visit carefully. This place is huge, and a person can waste a lot of time driving around looking for a trailhead. With planning, though, a person can spend hours on the network of trails that run throughout the area. Many of these trails are multiuse, so watch your step because it’s obvious they get plenty of use from horses.

With its hilly terrain, the trail I hiked through the Niangua River Hills Natural Area gave me a great workout, but given the size of this place, I didn’t even begin to put a dent in exploring it all, so I’m going to make a point of going back.

With a couple miles of Niangua River frontage and two boat ramps, Lead Mine Conservation Area would also be a good place to launch a day on the water — just not in January (unless you’re into that sort of thing).



7,760.7 acres in Dallas county.
From Plad, take Highway 64 west, then Route T north, then Route YY east 0.5 mile.

short.mdc.mo.gov/4kb

417-895-6880





Fountain Grove Conservation Area



Matt Seek said:

I lit out before sunrise on the first warm day of March. My kids and wife were home for spring break, and our usually quiet and empty house had grown boisterous. I needed a distraction-free spot to wrap up a writing assignment, and Fountain Grove Conservation Area seemed like a peaceful sanctuary for wordsmithing.

Wow was I spectacularly wrong.

Located 5 miles down a dead-end blacktop, in the floodplain of the unruly Grand River, the area offers nearly 8,000 acres of mosquito-humming marshes and soggy, bottomland forests.

I pulled into a picturesque parking lot at daybreak, rolled down my window, and shut off the car. Immediately, I was assaulted with the cacophony of a spring marsh in the throes of peak migration.

Wings whistled overhead as squadrons of waterfowl jockeyed to land in the smartweed-dotted pool that stretched outside my windshield. Happy ducks chuckled and quacked about their good fortune at finding room and board for the day, while Canada geese squabbled and honked over territorial boundaries. The musical peeps of lovesick amphibians and the calls of skittering shorebirds rounded out the symphony.

I quickly shelved hope of getting any writing done, pulled out my binoculars, and spent the rest of the morning enjoying the company of ducks, geese, and other winged wanderers.

The downside? Once I returned home, I had to work into the wee hours of the night to meet my writing deadline. But I'd gladly make the trip again.

If you visit in the fall, be aware that large swaths of Fountain Grove are closed to non-hunters during waterfowl season. It's a good idea to review the information on the area's webpage and print out a map before you depart.

I took off half a star for false advertising — though I crisscrossed the area from one soggy corner to the other, I found neither fountains nor groves.

Get out and discover a conservation area near you! What kind of review will you give it?



7,959 acres in Linn and Livingston counties. From the Meadville intersection on Highway 36, take Route W south for 5 miles, then continue south on Blackhorn Drive for less than a mile to reach the area headquarters.

short.mdc.mo.gov/4kH | 660-646-6122

Blue Spring Branch Conservation Area (the Ball Mill Resurgence Natural Area specifically)



Stephanie Thurber said:

This place hit the spot for our family and friends wanting to get out for some spring hiking. We were trying to go to Seventy-Six Conservation Area, but on the day we went, the river was too high to cross into the area. So, we used the MO Outdoors app to quickly find a new spot nearby, and the navigation took us directly to the parking lot for the Ball Hill Resurgence Natural Area on the Blue Spring Branch Conservation Area.

As soon as we got out of the car, we were able to find perfect hiking sticks, so big points for that. Only reason for taking one star off is because we weren't sure how long the trail was. With our kids being 5 and 8, this was important info to know — an extra quarter of a mile could mean the difference between the kids carrying all their necessities, or us carrying the kids *plus* all their necessities. It ended up being about a mile. Also, no bathrooms. But we did know that part going in.

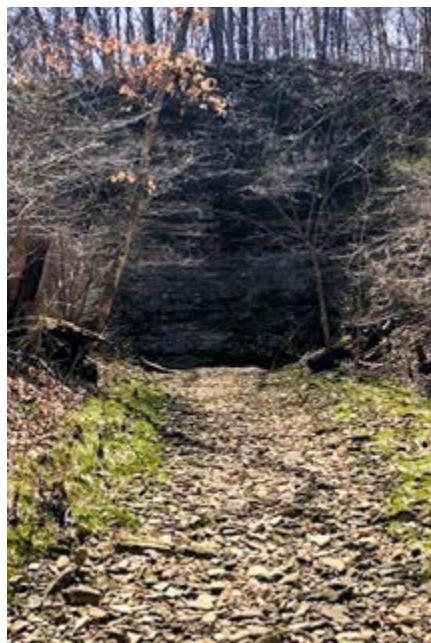
The looped trail in the natural area was great for our little explorers. We saw some turtles sunning on a pond log right away. The kids identified ferns, saw spring beauty flowers blooming, and felt moss along the tree trunks. We all enjoyed learning about the sinkholes from the signs, and we even found one that was heart-shaped. The highlight of the trail for us was the Ball Mill Resurgence. The kids couldn't resist adding a few rocks from the creek bed into the conduit.

If you're looking to ease into hiking in southeast Missouri, this is your place.

475 acres in Perry County. From Perryville, take Highway 61 north, then Route V north until the pavement ends, and follow County Road 916 into the area.



short.mdc.mo.gov/4kB | 573-290-5730



Painted Rock Conservation Area



Angie Daly Morfeld said:

Painted Rock Conservation Area is a favorite for my family. It is close to home, so it offers an easy escape and a multitude of outdoor experiences and opportunities. My favorite activity is hiking the Osage Scenic Bluff Trail in the fall, which is what my son and I did on this particular visit.

The trail is well-maintained and easily traversed. Accessing the trail from the parking area, you are immediately engulfed in towering trees — primarily oaks and hickories. My son got a kick out of the size of one large leaf, kissed with the colors of autumn, shed from one of these mighty trees. He picked it up from the ground and held it next to his face, and marveled that it was larger than his head!

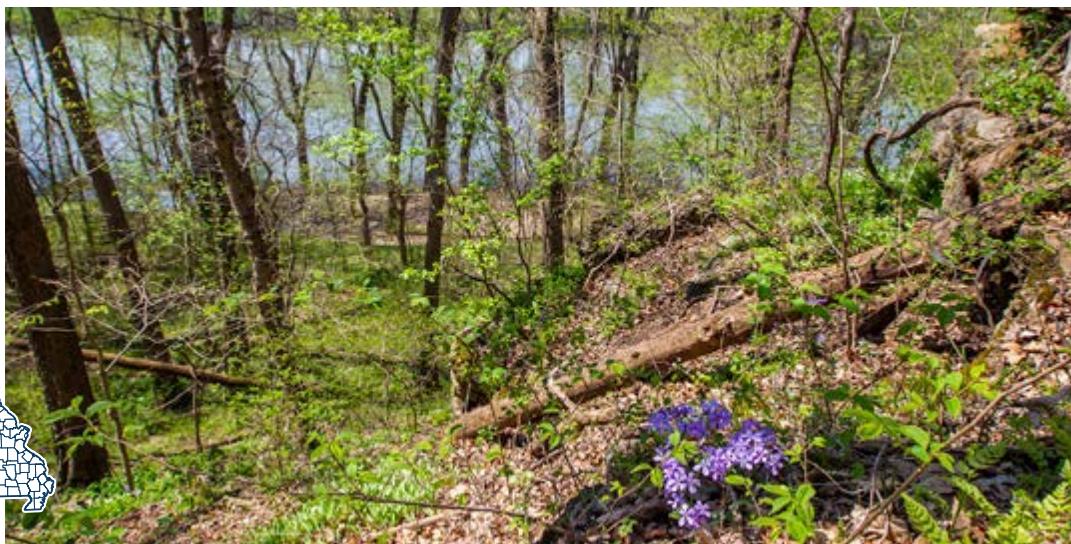
As you walk along the trail, you are treated to the history of the area. An Indian burial cairn, constructed between 500 and 1,500 years ago, sits along the trail, a reminder of the area's occupants as early as 9,000 years ago.

But, for me, the greatest attribute of the trail and the area is the boardwalk at the west boundary of the property that overlooks the Osage River. When you stand on the boardwalk, you get an unrestricted view of the river, the bluff, and trees so alive with the rich reds, golden yellows, and vibrant oranges of autumn.

Painted Rock is a thrill no matter the season you visit. Wildflowers bloom from May to October. The area contains six ponds for fishing and 60 acres managed for wildlife food plots. Deer and turkey hunting is allowed, as is trapping by special use permit.

1,479 acres in Osage County.
From Westphalia, take Highway 63 north, then Highway 133 west 7 miles to the area.

short.mdc.mo.gov/4k2
573-897-3797





Earthquake Hollow Conservation Area



Cliff White said:

If I was a real estate agent, and Earthquake Hollow Conservation Area was a house, I'd be describing it as a cozy bungalow. That is to say, it's small. But, just like a good cozy bungalow, what Earthquake Hollow lacks in size, it more than makes up for with charm.

The distinguishing feature of this area located in Callaway County is the "hollow," a canyon like ravine that borders the area on three sides. It is as much as 200 feet from ridge top to the floor of the hollow in places. The area brochure describes the walls of this ravine as one of the best examples of a chert conglomerate cliff in Missouri. I don't know what that means, other than you are in for some steep, rocky, rough terrain if you choose to descend into the hollow. However, if you are fit and careful, a descent into the ravine will reward you with fantastic views of the cliffs and surrounding wooded slopes.

The only trail on the area is a short path that follows the ridge from the parking lot into the middle of the area. At that point, you can enjoy the view from the top, or tackle the challenge of descending into the hollow.

The area is primarily wooded and might be kind of brushy in the summer. I visited in the spring, during the magic conjunction of the blooming of the redwoods and dogwoods. It was beautiful. I suspect the area has some great fall colors as well. I have not personally hunted on the area, but the area brochure suggests hunting for deer, turkey, rabbit, and squirrel are all good options. Due to the small size of the area, however, firearms firing a single projectile are prohibited.

If you are in central Missouri, looking for some interesting scenery, and want to get away from the crowds of larger, more popular conservation areas, Earthquake Hollow is worth a visit.



87 acres in Callaway County.
From Holts Summit, take
Highway 54 north for 2 miles,
then Route TT east 1 mile,
then County Road 452 east
1 mile to the area.

short.mdc.mo.gov/4k8 | 573-815-7900

Julian Steyermark Woods Conservation Area



Bonnie Chasteen said:

If you love Missouri's woodland wildflowers, plan to visit this little urban conservation area in the spring. It's a must-see if you live in Hannibal and worth the drive if you're coming from St. Louis or Columbia.

Before leaving Columbia, my hiking pal and I downloaded and printed the area map from the website. We had no trouble finding the parking lot along the Mississippi River on the northeast side of Hannibal.

Beyond the parking lot, a park-like sweep of mown grass under a canopy of tall trees lures visitors toward the trailhead. There, you can choose to start the loop trail hiking uphill or along the bottomland.

We chose the uphill branch and weren't disappointed. Sweet William, jack-in-the-pulpit, trillium, bloodroot, and other spring woodland flowers bordered the climb. Soon the narrow path led us into a sheltered gorge walled with limestone. We spotted semicircular veils of maidenhair fern, and, higher up on the ridgeline, two stalks of Adam and Eve orchid. This was a personal first for me — I'd only ever seen the withered leaves of this orchid in the winter.

For my pawpaw-loving friend, the highlight was the many patches of pawpaw growing and blooming almost the whole length of the trail. "There will be lots of fruit in August," she said.

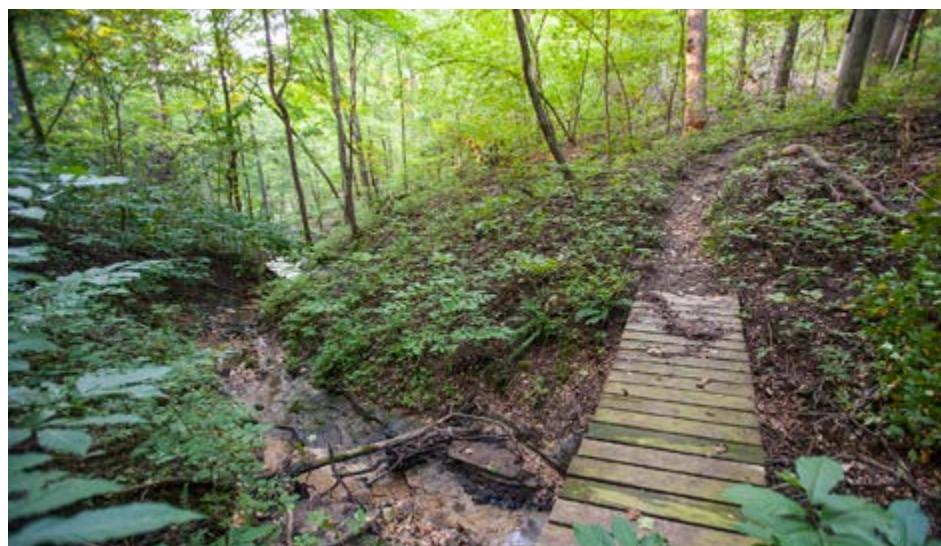
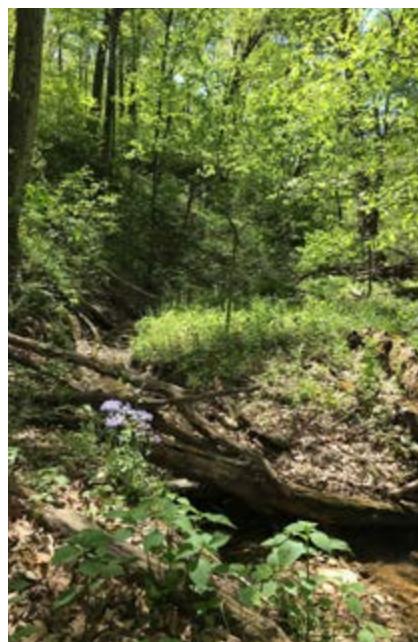
"If the critters don't get it first," I said.

Regardless, we agreed to head back in October to see what the area looks like in fall color.

Whenever you go, take a pair of hiking poles — the narrow trail can be tricky, especially along the bluffy drop-offs. Also, keep an eye out for poison ivy.

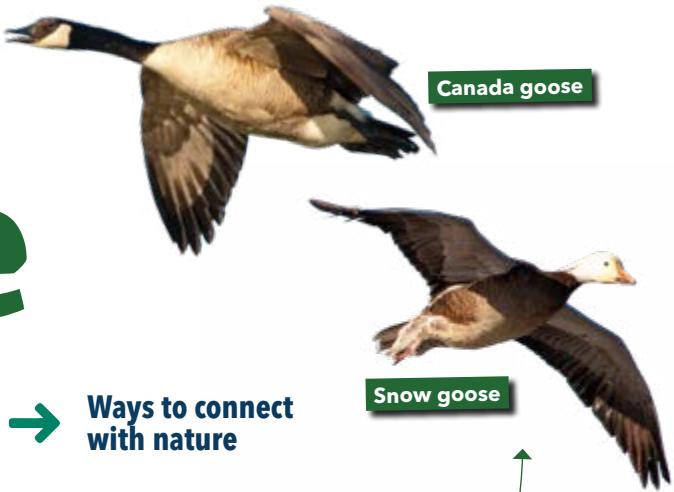
The area map shows a loop trail, and, for the most part, the trail is well-marked. Some new trails cut across the loop, but these are less well-marked, which is why I didn't give it a full five-star rating.

We saw patches of urban invasives like Chinese bittersweet, wintercreeper, and bush honeysuckles, but we were also pleased to see evidence of efforts to control them.



73 acres in Hannibal. From Hannibal, take Highway 168 north, then County Road 410 east 1 mile.
short.mdc.mo.gov/4kX
573-248-2530

Get Outside in MARCH



A Weed or Delicious Delicacy?

The common dandelion pops up and dots the landscape with its bright yellow flowerheads, to the disdain of most landscapers. Rather than thinking of it as an annoying weed, think of it as a delicious edible plant. Fry the flowerheads like you would morels or put them into pancakes. Or pick their tender new leaves and have them in a salad. Be sure to forage your wild edibles in places where pesticides have not been used.



Fields of Color

Henbit carpets entire fields with pinkish-purple flowers in early spring. Although it is almost universally viewed as a weed, this nonnative mint is not a serious one because its roots are shallow, and it fades before crops begin to grow. Hummingbirds, butterflies, and bees drink nectar from these early-blooming flowers, and some species of birds consume the tiny seeds.



Natural Events to See This Month

Here's what's going on in the natural world.



Crayfishes become active.



Spring azures are one of the earliest butterflies to emerge.



Three-toed box turtles become active.

KANSAS CITY REGION

Native Plants: NatureScaping Workshop

Saturday • March 12 • 8:30 a.m.–12:30 p.m.

Burr Oak Woods Conservation Nature Center,
1401 NW Park Road, Blue Springs, MO 64015

Registration required by March 4 (125 seats).

Call 888-283-0364 or email short.mdc.mo.gov/4Zc.

Ages 18 and older

Our popular NatureScaping event is back for 2022! At this free workshop, you will learn how to beautify your landscape with some of Missouri's best natural resources, native plants. There will be educational sessions on native plants for beginners, pollinators, natives for containers, and many more. And you don't want to miss our special guest speaker, Lenora Larson, local butterfly expert and native plant enthusiast. Plus, we will have a native plant sale so attendees can purchase plants and use their new knowledge to start native gardens at home.

Fishing for a Living Fossil

Paddlefish season opens March 15. Like a small shark, the paddlefish nearly lacks scales and has a cartilaginous skeleton. And like a baleen whale, it filters its dinner from the water. No other fish alive today has a paddle for a snout. For the latest information on paddlefish, including new length limits and a new definition on snagging, check the *Wildlife Code of Missouri* at short.mdc.mo.gov/Z8T or *A Summary of Fishing Regulations* at short.mdc.mo.gov/4Zp.



DANDELION SALAD / LARRY R. BECKETT



Prairie
ring-necked
snakes begin
mating.



Mourning
doves are
nesting.



NATIONAL ARCHERY IN THE SCHOOLS PROGRAM

Nearly everyone — regardless of age, size, or physical ability — can succeed at archery. The **Missouri National Archery in the Schools Program (MoNASP)** helps build stronger, more confident, and accomplished kids by teaching the basics of archery as part of school curriculum.

School archery programs:

- Improve school attendance
- Increase self-esteem
- Increase physical activity
- Appeal to all students

Plus, an
Archery
Equipment
Rebate
program and
maintenance
grants are
available.

Bring the program to
your school! Learn more at
MDC.MO.GOV/MONASP

Places to Go

ST. LOUIS REGION

Little Lost Creek Conservation Area

Trails, terrain, and drumming grouse

by Larry Archer

❸ **Combine multiuse trails, challenging terrain, and a chance to hear the drumming of history, and you have a visit to Little Lost Creek Conservation Area (CA).**

Little Lost Creek CA's 6.5 miles of multiuse trail is open to hiking year-round and to horseback riding and biking most of the year, said Little Lost Creek CA Manager Jeff Bakameyer.

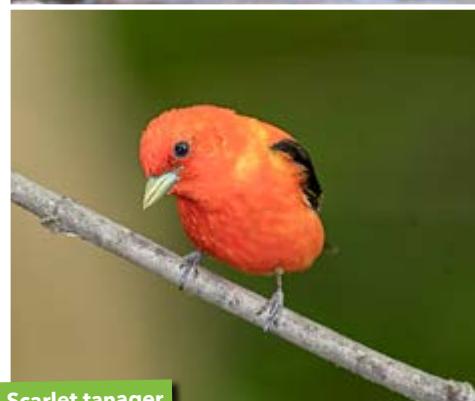
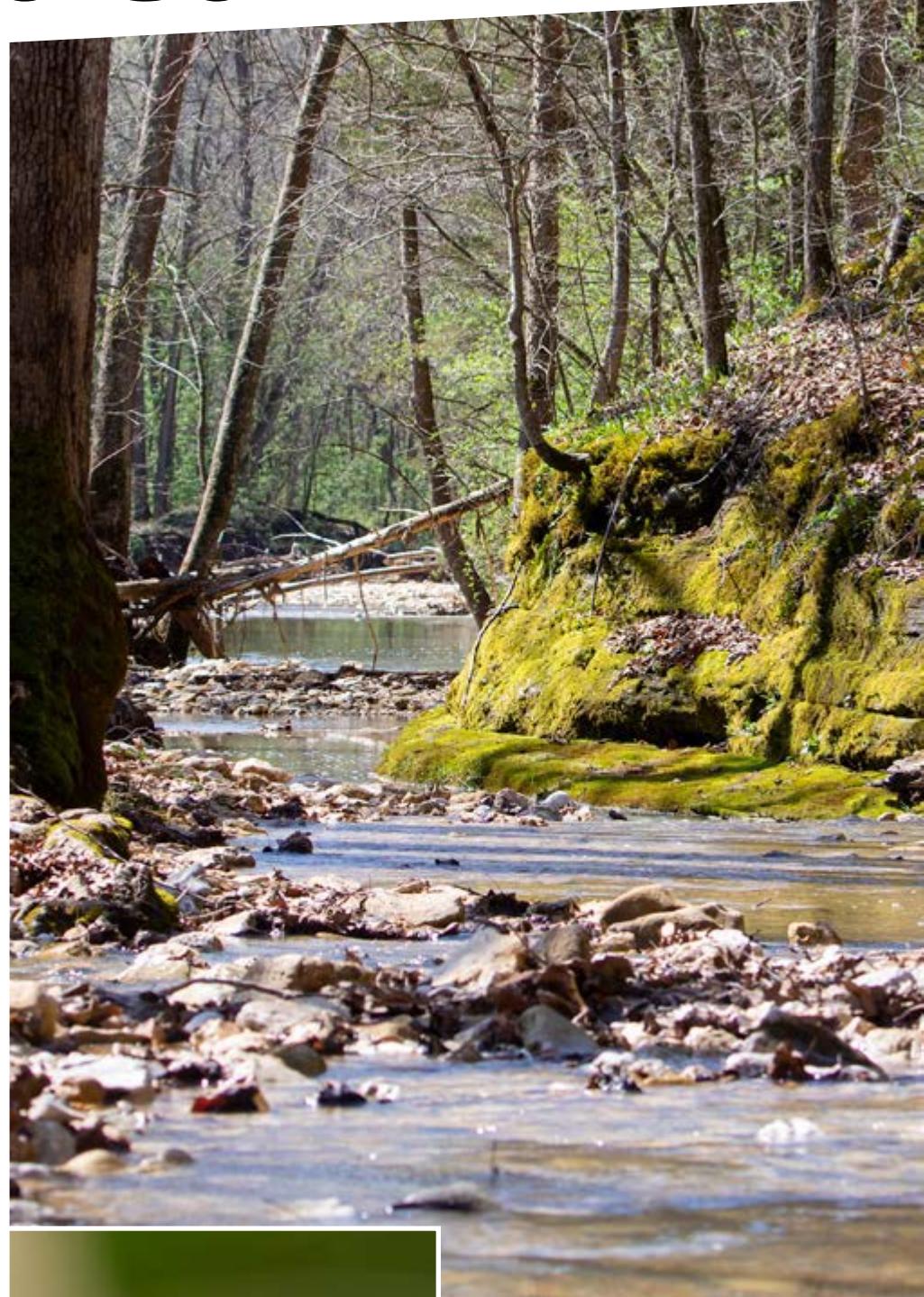
"It's just during the spring turkey seasons and all portions of the fall firearms deer season when you're not supposed to ride horses on it or bicycle," Bakameyer said.

The trail runs primarily along ridgelines, but when it drops off the ridges towards the area's namesake creek, it can be a challenge, he said.

"Little Lost Creek goes through some very, very rugged terrain," he said. "It's really cool terrain, but I mean it is some of the steepest, most rugged terrain probably in the state."

Little Lost Creek CA was one of the areas that received ruffed grouse during the recent ruffed grouse restoration project, and their mating call — known as "drumming" — can be heard in the spring.

"You have a legitimate chance, if you're on Little Lost Creek during the turkey season time of year, of hearing drumming ruffed grouse on the area," he said.



Scarlet tanager

"During that time of year, you are sure to hear a wide variety of Neotropical migrant birds, such as warblers, vireos, tanagers, and others."

—Little Lost Creek CA Manager
Jeff Bakameyer



LITTLE LOST CREEK CONSERVATION AREA

consists of 2,899 acres in Warren County. From Pendleton, take Route B south 4 miles, or from Pendleton take, Route EE south 4 miles.

38.781, -91.2897

short.mdc.mo.gov/4k7 636-456-3368

WHAT TO DO WHEN YOU VISIT



Birdwatching Included in the National Audubon Society's Daniel Boone/Little Lost Creek Conservation Areas Important Bird Area (short.mdc.mo.gov/4kn). The eBird list of birds recorded at Little Lost Creek CA is available at short.mdc.mo.gov/4ke.



Camping Designated camping sites.



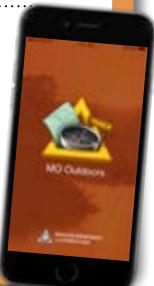
Trails 6.5 miles of natural surface/gravel multi-use (hike/bike/horse) trail and 4.5 miles of area service roads (natural surface/gravel).



Hunting Deer and **turkey**

Regulations are subject to annual changes. Refer to MDC's regulation page online at short.mdc.mo.gov/Zjw for regulations.

Also **rabbit**, and **squirrel**



DISCOVER MO OUTDOORS

Users can quickly and easily find outdoor activities close to home, work, or even while traveling with our free mobile app, MO Outdoors. Available in Android or iPhone platforms at mdc.mo.gov/mooutdoors.

WHAT TO LOOK FOR WHEN YOU VISIT



Striped skunk



Ruffed grouse



Three-toed box turtle



American woodcock

Wild Guide



Red-eared Slider

Trachemys scripta elegans

Status

Common

Size

Length: 5–8 inches

Distribution

Statewide, except for a few northern counties



Did You Know?

Millions of these turtles were sold as pets before 1975, with most of them dying due to improper care. Sales were curtailed when it was learned that the turtles or their water could potentially transmit salmonella to their handlers, including children.

One of the most common semi-aquatic turtles in Missouri, red-eared sliders are recognized by a distinct red or orange stripe present behind each eye. Red-eared sliders can live in a variety of aquatic habitats, including rivers, sloughs, oxbow lakes, and constructed lakes and ponds, as long as there is ample aquatic vegetation for both food and security, suitable basking sites, and preferably a mud bottom.



LIFE CYCLE

Red-eared sliders become active in March and remain active until mid-October. You can often find them basking in the sun on logs or rocks. Their name – slider – comes from their ability to quickly slide from their basking spot into the water. Courtship and mating occur between March and June. Females leave the water and lay up to 22 eggs in a clutch. Hatching usually takes place in late summer or early autumn.



ECOSYSTEM CONNECTIONS

In their native land, these turtles fill a role of herbivore and mid-level carnivore. However, American-bred sliders are being supplied to the pet trade in Europe and Asia, where some have been released to the wild. There, they are causing a decline of native species, especially in southern Europe.



FOODS

Red-eared sliders forage in early morning and late afternoon, eating aquatic plants and animals.

Outdoor Calendar

MISSOURI DEPARTMENT OF CONSERVATION



Free MO Hunting and MO Fishing Apps

MO Hunting makes it easy to buy permits, electronically notch them, and Telecheck your harvest. MO Fishing lets you buy permits, find great places to fish, and ID your catch. Get both in Android or iPhone platforms at short.mdc.mo.gov/Z12.

FISHING

Black Bass

Impounded waters and non-Ozark streams:
Open all year

Most streams south of the Missouri River:

- ▶ Catch-and-Release:
March 1–May 27, 2022
- ▶ Catch-and-Keep:
May 28, 2022–Feb 28, 2023

Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2022

Nongame Fish Gigging

Impounded Waters, sunrise to sunset:
Feb. 16–Sept. 14, 2022

Streams and Impounded Waters,
sunrise to midnight:
Sept. 15, 2022–Feb. 15, 2023

Paddlefish

Statewide:
March 15–April 30, 2022

On the Mississippi River:
March 15–May 15, 2022
Sept. 15–Dec. 15, 2022

Trout Parks

State trout parks are open seven days a week
March 1 through Oct. 31.

Catch-and-Keep:
March 1–Oct. 31, 2022

For complete information about seasons, limits,
methods, and restrictions, consult the *Wildlife
Code of Missouri* at short.mdc.mo.gov/Zib.
Current hunting, trapping, and fishing regulation
booklets are available from local permit vendors
or online at short.mdc.mo.gov/ZZf.

HUNTING

Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2022

Coyote

*Restrictions apply during April, spring turkey
season, and firearms deer season.*

Open all year

Crow

Nov. 1, 2021–March 3, 2022
Nov. 1, 2022–March 3, 2023

Deer

Archery:
Sept. 15–Nov. 11, 2022
Nov. 23, 2022–Jan. 15, 2023

Firearms:

- ▶ Early Youth Portion (ages 6–15):
Oct. 29–30, 2022
- ▶ November Portion:
Nov. 12–22, 2022
- ▶ Late Youth Portion (ages 6–15):
Nov. 25–27, 2022
- ▶ Antlerless Portion (open areas only):
Dec. 3–11, 2022
- ▶ Alternative Methods Portion:
Dec. 24, 2022–Jan. 3, 2023

Groundhog (woodchuck)

May 9–Dec. 15, 2022

Pheasant

Youth (ages 6–15):
Oct. 29–30, 2022

Regular:
Nov. 1, 2022–Jan. 15, 2023

Quail

Youth (ages 6–15):
Oct. 29–30, 2022

Regular:
Nov. 1, 2022–Jan. 15, 2023

Rabbit

Oct. 1, 2022–Feb. 15, 2023

Squirrel

May 28, 2022–Feb. 15, 2023

Turkey

Archery:
Sept. 15–Nov. 11, 2022
Nov. 23, 2022–Jan. 15, 2023

Firearms:

- ▶ Youth (ages 6–15): April 9–10, 2022
- ▶ Spring: April 18–May 8, 2022
- ▶ Fall: Oct. 1–31, 2022

Waterfowl

See the Migratory Bird and Waterfowl
Hunting Digest or visit short.mdc.mo.gov/ZZx
for more information.

TRAPPING

Beaver, Nutria

Nov. 15, 2021–
March 31, 2022





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The early bird gets the worm, but not in the case of this belted kingfisher. This early bird got a fish. What will you get when you wake up with the sun? Discover nature and find out!

by Noppadol Paothong

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